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# UM earns grant to study high-country climate change

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**NEWS RELEASE**

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**UM EARNS GRANT TO STUDY HIGH-COUNTRY CLIMATE CHANGE**

**MISSOULA –**

University of Montana researcher Tom Martin has studied climate change and its impacts on animals and plants in the mountains of Arizona for the past 25 years.

His work is unparalleled for the length of time he has examined long-term effects of climate on populations in a sensitive area where snow levels keep retreating to higher elevations, wiping out some species and bolstering others.

The long-term project will continue. Martin and UM plant ecologist John Maron recently were awarded a five-year, $1 million grant from U.S. Geological Survey's Climate Change Science Program. Only 10 programs across the country received the funding.

"It's an honor to get this award, and we feel it's extremely important work," said Martin, senior scientist and assistant leader of UM's Cooperative Wildlife Research Unit. "It has been warmer on Earth over the millennia, but we have never experienced this rate of change ever in the history of the world. We need to know how it will affect us."

The study area is a riparian ecosystem at an elevation of 8,000 feet east of Flagstaff. Martin and his team have erected three 25-acre enclosures to exclude elk in the area.

"Because of warming, snow is shifting up in elevation, and this is changing the distribution of elk," he said. "As the snow moves higher, elk are remaining at higher elevations as well. They then eat vital deciduous tree species such as aspen and canyon maple, which in turn are really important for biodiversity in the area."

Martin is a bird expert, so he studies the effects of elk on the area's plants and the subsequent impacts on birds. UM's Maron and a student researcher also are examining the area's distribution of small mammals, which eat bird eggs.

"So how is the change in plants allowing small mammals to affect the birds?" Martin asks. "The change causes changes in the species and abundances of small mammals that eat the eggs and nestlings of birds and reduce their ability to sustain the populations. The birds rely on the plants for habitat, providing food and cover from predators, so if we lose that habitat, we are losing birds."

Martin said one bird species, MacGillivray's warbler, was common in the area when he first started his study but has since disappeared. He uses 22 study plots in his research, and there used to be 2.5 mated MacGillivray pairs per plot. That number dropped to zero during the past 15 years.

Birds such as the orange-crowned warbler and hermit thrushes also are in decline, but another species, the gray-headed junco, has experienced a population surge. So warming temps have generated both winners and losers.

Aspen trees definitely are among the losers. Martin offers pictures that show thick stands of aspen inside his elk-free enclosures. Trees only 3 years old reach over his head. Outside the enclosures, however, images show dead stems and a 9-year-old tree that is only ankle high.

"Climate change is serious because we are approaching the edge of the temperatures we have experienced in history," he said, "and the rate of change is continuing to increase at an increasing rate. It could have dire implications."

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